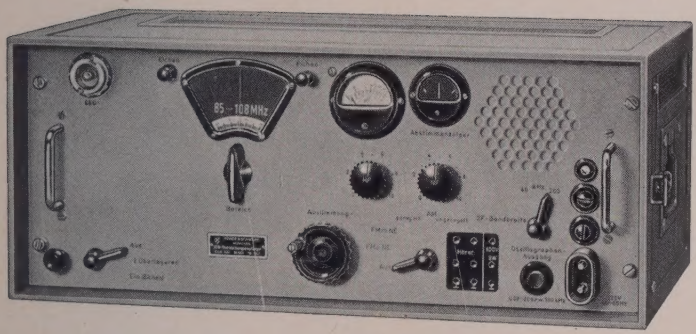
Type ESM 300 VHF MONITORING RECEIVER BN 15074/2



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5074/2 AE

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INSTRUMENT SECTION
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Instruction Book

VHF MONITORING RECEIVER 85/300

for AM and FM

Type ESM 300 BN 15074/2

Note: Always quote the Type and Order Number (BN) in addition to the Serial Number (FNo) of the set when asking for technical information and, in particular, when ordering repair parts.

1 Specifications

Frequency range	85 to 300 mc
divided into 5 ranges	85 to 108/140/180/235/300 mc
Scale calibration	approx. linear
in the 1st range	approx. 120 kc per 1 mm of scale length
in the 5th range	approx. 200 kc per 1 mm of scale length
Check on calibration	in all ranges by harmonics of the crystal-controlled standardizing oscillator (21.4 mc ± 0.01 %)
Antenna terminal	unbalanced R&S short-stroke connector Dezifix B
Input impedance	approx. 60 ohms
Modes of operation	FM less de-emphasis (FM less DE) FM with de-emphasis (FM with DE) AM with AVC AM less AVC

Sensitivity

The following input voltages are required for a signal-to-noise ratio of 10 db between the modulated and unmodulated carrier:

AM narrow-band operation (m = 30 %, i-f bandwidth 40 kc)

Ranges 1 thru 4	less than 5 μv
Range 5	about 10 μv

FM less DE, narrow-band operation (frequency deviation 10 kc, i-f bandwidth 40 kc)

Ranges 1 thru 4	less than 2 μv
Range 5	less than 4 μv

FM with DE, broadband operation (frequency deviation 40 kc, i-f bandwidth 200 kc)

Ranges 1 thru 4	less than 3 μv
Range 5	about 10 μv

Image frequency rejection

Ranges 1 thru 3	better than 70 db
Ranges 4 and 5	about 60 db

I-f rejection	better than 90 db

Intermediate frequency

Narrow-band operation	21.4 and 3.4 mc
Broadband operation	21.4 mc

I-f bandwidth

Narrow-band operation	40 kc
Broadband operation	200 kc

A-f bandwidth

Narrow-band operation	0.3 to 3 kc
Broadband operation	0.03 to 15 kc

A-f outputs

test output for oscilloscope	13-mm jack; upper cut-off frequency 100 kc
headphone output	50 mw into 2000 ohms
power output	80 v/2 w
built-in loudspeaker	0.5 w; can be switched off

Input voltage indication	by meter
with AVC	logarithmic scale (for absolute measurements the calibration must be made with a separate standardizing oscillator)
less AVC	linear scale with relative values

Tuning indication	by meter

Auxiliary oscillator (2nd local oscillator) used as frequency standardizing oscillator	21.4 mc ± 0.01 %, crystal-controlled

used as oscillator for A_1 operation	21.4 mc (for broadband operation) 3.4 mc (for narrow-band operation)
Power supply	220 v 40 to 60 cps (110 va)
Tube complement	1 tube EC 80 1 tube EC 81 7 tubes EF 42 1 tube ECC 81 2 tubes EF 95 1 tube EL 41 2 tubes EZ 40 2 tubes PL 81 1 tube EF 40 1 stabilizer 85 A 2 1 festoon lamp 6.3 v/0.3 amp. 2 fuses 1 DIN 41571 1 fuse 0.16 DIN 41571
Dimensions	22" x $14^1/_8$" x $8^1/_2$" (according to DIN 41490)
Weight	62 lbs.

2 Purpose and Application

The ESM 300 is a versatile superheterodyne receiver for the frequency range 85 to 300 mc and is preferably suited for radio monitoring and combating radio interferences. It enables the following emissions to be received:

(a) **CW transmission.** The keyed carrier is made audible by switching into circuit the built-in auxiliary oscillator and by tuning the r-f section for the desired pitch.

(b) **MCW transmission or a-m voice transmission.** Here it is possible to select either an i-f bandwidth of 40 kc with an a-f bandwidth of 0.3 to 3 kc or an i-f bandwidth of 200 kc with an a-f band of 0.03 to 15 kc.

(c) **FM voice transmission.** I-f bandwidth and a-f band can be selected as in operation for a-m reception. At an i-f bandwidth of 40 kc, the ratio detector handles a frequency deviation of 18 kc and at a bandwidth of 200 kc a frequency deviation of 75 kc.

(d) **Pulse modulated waves or interfering frequencies.** From the frequency spectrum of an interfering pulse, the receiver cuts out a portion corresponding to the i-f bandwidth and applies the pulses resulting after demodulation to an oscilloscope.

3 Function and Construction

3.1 R-f section

Essentially, the r-f section contains an input band-filter, a balanced four-gang capacitor, four coil turrets arranged one after another on one shaft and containing 5 range coils each, a low-noise input tube (Rö 1) in grounded-

grid connection, an amplifier tube (Rö 2), a mixer tube (Rö 3), an oscillator tube (Rö 4) and the primary circuit of the first i-f band-filter.

The input band-filter suppresses all frequencies below or above the receiving range and hence prevents ambiguities. The signal passes from this filter via a coupling coil to the first resonant circuit and thence via another coupling coil to the cathode of the tube Rö 1. For the radio frequency, the grid of this tube is taken to ground through two low-inductance capacitors; thus it is possible to use this tube for automatic volume control. The delayed automatic volume control operative in the modes of operation FM LESS DE, FM WITH DE and AM WITH AVC eliminates overdriving of the subsequent stages with high input voltages while optimum sensitivity is achieved at low input voltages.

The second tuned circuit is arranged symmetrically between Rö 1 and Rö 2 via capacitances. The same holds for the third tuned circuit between Rö 2 and the mixer Rö 3. Tracking at three frequencies exists between the oscillator tank circuit whose frequency is higher by the intermediate frequency (21.4 mc) than the receiving frequency, and the other tuned circuits of the radio-frequency section. Each of the 4 x 5 tank circuit coils is provided with a trimmer for capacitance adjustment. The trimmers are in the coil turrets under the associated inductor. The scale of the four-gang capacitor is calibrated in receiving frequencies. A mask coupled with the shaft of the coil turret ensures that it is only the scale of the receiving range adjusted for that is visible.

The crystal-controlled standardizing oscillator Rö 11 oscillates on the fundamental frequency of 21.4 mc ± 0.01 % and produces so many harmonics of sufficient amplitude that the calibration of the frequency scale which is subdivided into 5 separate ranges can be checked in steps of 21.4 mc and, if necessary, corrected by means of the panel trimmer (at the right of the frequency scale) C 56 of the oscillator Rö 4. The standardizing oscillator is put into operation by cutting in its plate voltage with the aid of the switch S 7 (marked 2ND OSCILLATOR on the front panel). The bandwidth selector should then be thrown to 200 kc as it is only under this condition that the 2nd oscillator will provide the frequency of 21.4 mc. If now the button S 2 (at the left of the frequency scale) is opened, the frequency spectrum passes via the cable K 5 and the small capacitance

C 23 – C 22 to the second tuned circuit of the radio-frequency section. At the same time, the output voltage of the standardizing oscillator is applied to the grid of the i-f tube Rö 8 through the cable K 4 and thus mixed with the intermediate frequency of 21.4 mc. The frequency calibration is achieved by adjusting the trimmer C 56 for zero beat.

3.2 Intermediate-frequency Section

The input of the i-f section consists of a filter of four circuits, the first of which is included in the r-f section. The connection is made through the cable K 3. The four tubes Rö 5, Rö 6, Rö 7 and Rö 8 are provided to amplify the i-f voltage. After the first i-f tube Rö 5, it is possible to select a bandwidth of 200 kc or 40 kc. At a bandwidth of 200 kc, the i-f section operates with an intermediate frequency of 21.4 mc, while it operates with a frequency of 3.4 mc at a bandwidth of 40 kc. A separate set of i-f circuits is provided for each of the two intermediate frequencies. In the circuit diagram, the upper i-f circuits are associated with the intermediate frequency of 21.4 mc, whereas the lower ones are associated with the intermediate frequency of 3.4 mc. For the production of the intermediate frequency of 3.4 mc, the first i-f tube Rö 5 with the crystal Q 1 functions as a self-oscillating mixer. The crystal oscillates on 18 mc $\pm$ 0.01 % resulting in an intermediate frequency of 21.4 – 18 = 3.4 mc.

To produce the negative voltage for the automatic volume control, the i-f voltage present after the i-f tube Rö 8 is rectified by the crystal diode Gl 2. The i-f tubes Rö 6 and Rö 7 as well as the first radio-frequency tube Rö 1 are included in the AVC circuit. However, this is true only for the three modes of operation FM LESS DE, FM WITH DE and AM WITH AVC. In the fourth operation AM LESS AVC the control line is taken to chassis via the switch S 5 I. On the other hand, it is possible in this mode of operation to adjust the r-f and i-f amplification by means of the control R 70 permitting the cathode voltage of the tubes Rö 1, Rö 2 and Rö 6 to be varied. The AVC voltage produced by the diode Gl 2 is used furthermore to indicate the voltage at the receiver input on the moving-coil meter I 1. This holds for the modes of operation FM LESS DE, FM WITH DE and AM WITH AVC. Here the meter covers a range of from 5 to 100,000 µv. A positive bias fed into the crystal-diode circuit through resistor R 118

(below Rö 10 in the circuit diagram) ensures that a control voltage and reading is obtained only with the voltage at the receiver input exceeding about 3 μv. With voltages lower than the above threshold the receiver consequently operates at its maximum sensitivity. In operation AM LESS AVC, the meter covers a range of indication of about 1 : 10. The reading has then no direct relation to the input voltage and serves principally for comparison measurements.

The demodulation of amplitude modulated signals (voice or MCW transmission) is achieved by the crystal diode Gl 3 after the tube Rö 8. The a-f signal is brought out from the i-f section via a choke, passes through K 7 – S 5 II – K 13 to the volume control R 75 and thence through the cable K 11 to the input of the a-f amplifier.

When receiving the signals of a transmitter operating on keyed continuous waves it is advisable to use an i-f bandwidth of 40 kc, that is to say, an intermediate frequency of 3.4 mc. To make the signals audible, the r. h. triode section of the tube Rö 11 is operated as a Hartley oscillator on the frequency 3.4 mc. Through the cable K 4, this frequency is applied to the grid of the i-f tube Rö 8 and the difference frequency (beat note) thus resulting is passed on to the a-f amplifier for monitoring just as is done in a-m reception. The desired beat note can be obtained by slightly varying the tuning adjustment on the scale of C 10.

The crystal diode Gl 10 serves to rectify interference voltages that are to be studied on an oscilloscope. To this end, the i-f amplifier is operated at a bandwidth of 200 kc. To obtain a wide frequency spectrum, the a-f signal supplied to the output OSCILLOSCOPE is not passed through the a-f amplifier but through the cathode follower Rö 10 especially provided for this purpose. The capacitor C 157 isolates the output from direct current. The output impedance is approximately 200 Ω, the upper cut-off frequency lies in the vicinity of 100 kc.

The limiter Rö 9 is provided for the reception of frequency modulated transmitters and two separate ratio detectors are used for the two bandwidths that can be selected. The ratio detector with the crystal diodes Gl 4 – Gl 5 is operative at a bandwidth of 200 kc, while the one using Gl 6 – Gl 7 is operative at a bandwidth of 40 kc. Through the cable K 22 + K 8 or K 21 + K 9, the a-f signal is applied to the bandwidth selector

S 3 VI, passes subsequently to the volume control R 75 through K 10 – S 5 II – K 13 and thence to the a-f amplifier. The a-f lines K 22 + K 8 and K 21 + K 9 also carry the rectified current making the moving-coil meter 12 read the center-frequency error. The meter covers a range of ± 100 kc at a bandwidth of 200 kc and a range of ± 20 kc at a bandwidth of 40 kc. Correct tuning to the center frequency of the carrier is indicated by the needle deflecting to the left or right of its mid-position if the tuning control is slightly varied.

3.3 Audio-frequency Section

The audio-frequency section contains the pre-amplifier Rö 14 and the final amplifier Rö15 with a power output of 2 watts. The volume control R 75 with a subsequent RC network R 77 – C 159 used to eliminate the transmitter pre-emphasis (50 µsec) at f-m reception has been inserted at the input of the a-f section. This de-emphasis network is operative only at FM WITH DE.

Due to the insertion of additional frequency-dependent degenerative elements, the audio-frequency transmission band is narrowed down in the a-f section, if the i-f bandwidth is switched over from 200 kc to 40 kc. The i-f bandwidth of 200 kc goes along with an a-f bandwidth of 0.03 to 15 kc and the i-f bandwidth of 40 kc with the one of 0.3 to 3 kc.

The output transformer Tr 1 has three electrically isolated secondary windings: one for an external loudspeaker having an impedance of about 3.5 kΩ (jacks marked 80 V/2 W), one for two headphones having an impedance of about 4 kΩ (jacks PHONES), and another for the built-in 0.5-w loudspeaker Lt 1 which can be turned on by the panel switch S 4. S 4 is combined with R 75. The loudspeaker Lt 1 can be switched into circuit by pulling out the knob of the control R 75.

3.4 Power Supply

At its primary end, the power supply is arranged for operation from an a-c voltage of 220 v and protected by the two fuses Si 1 and Si 2. The power switch S 6 is mechanically coupled with S 5 selecting the type of operation. In the first position of the switch S 5 (position OFF), S 6 is open. Filtering prevents r-f interferences from entering the power leads.

At its secondary end, the power supply incorporates the two rectifier tubes Rö 16 and Rö 17 placed in parallel to produce the plate voltage, and the tubes Rö 18, Rö 19, Rö 20 and Rö 21 used for stabilization. This stabilizing circuit keeping the plate voltage constant in spite of line voltage fluctuations and changes in the plate current operates as follows: The current regulating tubes Rö 18 and Rö 19, power pentodes of low internal resistance, are in series to the load and thus passed by the total plate current. With the line voltage, say, rising the screen voltage of the control tube Rö 20 becomes more positive, its plate current and the voltage drop across the plate resistor R 92 greater, the grid voltage of the current regulating tubes Rö 18–Rö19 more negative and their internal resistance greater to the extent that the voltage across the load drops to the original amount. The neon stabilizer Rö 21 serves to provide a certain reference grid voltage at the control tube Rö 20. The plate voltage of the receiver changes less than 1 % with a line voltage fluctuation between 200 and 240 v. For example, if the voltage across the load falls off due to a higher current through the load, then the voltage tapped across the voltage divider resistor R 96 drops likewise, the grid bias of Rö 20 becomes thus more negative, the voltage drop across the plate resistor R 92 smaller, the grid bias of the current regulating tubes Rö 18–Rö 19 less negative and hence their internal resistance lower to the extent that the voltage across the load increases to the original value. The variable resistor R 96 serves to adjust the plate voltage to 220 v. The fine-wire fuse Si 3 (= 160 ma) is inserted in the plate lead to protect the power supply. A particular advantage of this kind of stabilizing circuitry is a noteworthy compensation of the a-c hum. The hum voltage present at the load end passes through the RC network R 95–R 96-C 204 to the grid of the tube Rö 20 where it is amplified, shifted 180° as to phase and thus applied to the grid of the current regulating tubes Rö 18–Rö 19.

3.5 Interior and Exterior Construction

The r-f section, the standardizing oscillator with Rö 11, the i-f section, the a-f section and the power supply are self-contained assemblies mounted with an eye to repair work in such a manner as to be readily replaceable after a few screws have been loosened and a few connections disconnected.

All controls and switches of the receiver and the terminals for the antenna, headphones, loudspeaker and power cable are on the front panel. From the upper left-hand corner to the right there are the R & S short-stroke connector for the antenna cable (60 Ω), the button S 2 (CALIBRATION), the five-section frequency scale, the trimmer C 56 (CALIBRATION) of the oscillator Rö 4, the meter I 1 for direct reading of the input voltage, the discriminator meter I 2 for tuning indication when receiving frequency modulation, and the 0.5-w loudspeaker which is behind the perforated section of the front panel. The wing knob of the wave-band selector is below the frequency scale, the gain control R 70 is below I 1, and the volume control R 75 combined with S 4 for switching the built-in loudspeaker Lt 1 on and off is below I 2.

As viewed from the lower left-hand corner to the right, there are the knurled terminal for the connection of the ground wire, the switch S 7 with the positions OFF and ON (CALIBRATION), the crank type knob TUNING of the frequency scale, the mains and selector switch S 5 with the positions OFF, FM LESS DE, FM WITH DE, AM WITH AVC and AM LESS AVC, the terminal panel with nine jacks for two headphones and one loudspeaker (80 v/2 w), the coaxial 13-mm jack for connection of an oscilloscope and the bandwidth selector S 3 which is above the latter and has the positions 40 KC and 200 KC. The right-hand side of the front panel contains the power connector (220 v/40 to 60 cps) and the two power fuses Si 1 and Si 2.

4 Operating Instructions

4.1 Connections

The receiver has been designed for operation from 220 v a-c. It operates satisfactorily from voltages between 200 v and 240 v. In case of line voltages other than above, it is necessary to connect a suitable transformer ($\geqq$ 110 va) ahead of the set. A power cable with a female connector (R & S Stock No. LK 333) serves to connect the set with the mains. Check to see prior to turning the set on whether the fuses (1 DIN 41571) provided at the front panel have the correct rating (1amp).

The antenna is connected by means of a coaxial 60-Ω cable which is provided with an R & S short-stroke connector "Dezifix B" (Order No. FS 432/60) at the receiver end. When coupling the connectors, the little caps of their inner conductors should be pressed together so far that the faces of their outer conductors are fully contacting. Push the union nut of the one connector on the square thread of the other one and turn it (about 60°) until it is securely tightened.

One or two headsets (impedance $\geq$ 2000 Ω) can be connected with the jacks marked PHONES. The associated jacks are above each other. The two upper ones are floating and direct-current free while the lower ones are connected with the cabinet. This holds also for the three jacks 80 V/2 W for connection of an external loudspeaker (impedance $\geq$ 3500 Ω).

Where the set is not grounded through the power cable with its protective ground type plug, this can be made by means of a separate line which is then to be connected to the knurled terminal at the lower left-hand corner.

4.2 Setting the Mechanical Zero on the Meters

With the receiver switched off, the needles of the meters should be at their mechanical zero. On the meter beside the frequency scale, this is the zero mark of the two scales; the mechanical zero of the other meter is at mid-scale. Zeroing is possible by means of the slotted screws recessed in the housings of the meters.

4.3 Switching On

The receiver is switched on by means of the selector switch when throwing the lever from OFF to one of its four positions FM LESS DE, FM WITH DE, etc. The illuminating lamp of the frequency scale indicates whether the mains voltage is present or not.

The set is ready for operation after about one minute. To retain the accuracy of the calibration, it is, however, recommended to allow a warm-up period of about half an hour. The final value of the overtemperature is reached after a period of about three hours.

4.4 Tuning

First select the frequency range by means of the wing knob below the frequency scale and then adjust the scale for the desired receiving frequency with the aid of the crank type knob TUNING. The mask which rotates with the waveband switch and bears the inscriptions of the lower and upper cut-off frequencies of each range just brings into view the graduation of the range adjusted for. The procedure to correct the calibration of the scale is set forth under 5.1.

The right-hand meter serves the correct tuning in f-m reception, whereas the left-hand meter is used for tuning in a-m reception. Correct tuning in f-m reception is obtained with the needle deflecting to the left or right of its mid-position if the tuning adjustment is slightly varied. Tune for maximum deflection when receiving amplitude modulated waves.

4.5 Selecting the Mode of Operation

The adjustment of the lever knobs for the 2ND OSCILLATOR, for the modes of operation FM LESS DE, FM WITH DE, AM WITH AVC or AM LESS AVC and for the i-f bandwidth 40 KC or 200 KC depends on the type of modulation of the transmitter to be received and on the i-f bandwidth which the receiver should have in this case.

4.51 Operation FM LESS DE

This type of operation is selected for the reception of frequency modulated transmitters. Here the receiver does not de-emphasise the pre-emphasis of a transmitter. The knob 2ND OSCILLATOR should then be on OFF.

I-f bandwidth: Select an i-f bandwidth of **40 KC** when receiving an a-m transmitter with a peak deviation of up to 15 kc if a narrow a-f bandwidth of 0.3 TO 3 KC is desired. However, select the i-f bandwidth of **200 KC** if the receiver is to handle a peak deviation of up to 75 kc while it is desirable to have an a-f bandwidth of 0.03 TO 15 KC.

Gain control: In this operation, the input tube of the r-f section and two tubes of the i-f section operate with automatic volume control. The gain control marked **VHF** is then inoperative.

Voltage indication: The voltage appearing at the antenna input is indicated by the left-hand meter. Refer to the scale graduated from 0 to 10^5 μv. The reading depends on the somewhat frequency-dependent amplification of the r-f section and slightly also on the line voltage. To measure the voltage accurately, compare it with a precisely known reference voltage.

A-f control: The desired output voltage (volume) is obtained with the aid of the knob marked **AF.** The built-in loudspeaker is switched into circuit when this knob is pulled out.

4.52 Operation FM WITH DE

This operation is selected for the reception of frequency modulated transmitters with a standard pre-emphasis (50 μsec). The receiver then operates with a corresponding de-emphasis. In all other respects refer to 4.51.

4.53 Operation AM WITH AVC

This operation serves to receive MCW or voice transmissions. For i-f and a-f bandwidth, gain control, voltage indication and a-f control refer to 4.51.

4.54 Operation AM LESS AVC

This mode of operation is also intended for the reception of MCW or voice transmissions, however, in particular it is suited to receive A_1 transmissions or interfering frequencies that are to be studied on an oscilloscope. For the reception of A_1 transmission throw the knob 2ND OSCILLATOR to ON. The control marked VHF allows varying the gain. The gain should be so adjusted that the needle of the left-hand meter does not deflect beyond full scale. A further increase of the gain would lead to overmodulation. In this mode of operation, the linear meter scale without voltage calibration serves to read the voltage.

When monitoring the signals with the built-in loudspeaker, advance the a-f control so far only that there is no feedback by acoustic vibrations.

4.6 Output for Oscilloscope

Connect the receiver and the oscilloscope through a shielded low-capacitance cable equipped on its receiver end with a 13-mm plug (Order No. FS 413/1).

The input impedance of the oscilloscope should be at least 1.5 kΩ, if one wants to retain the lower cut-off frequency (30 cps) of the output for the oscilloscope. The source impedance of the latter is about 200 Ω in series with 4 μf.

Adjust the receiver as follows: Put 2ND OSCILLATOR to OFF, i-f bandwidth selector to 200 KC, selector switch to AM LESS AVC. The desired voltage at the output for the oscilloscope should be adjusted with the aid of the control VHF since here the control AF is ineffective.

5 Maintenance

5.1 Checking and Correcting the Frequency Calibration

The frequency scale can be checked at the red calibration marks due to the spectrum of harmonics (multiples of 21.4 mc ± 0.01 %) of the standardizing oscillator. To this end, set 2ND OSCILLATOR to ON (CALIBRATION), i-f bandwidth selector to 200 KC, selector switch to AM WITH AVC, turn on the loudspeaker by pulling out the knob AF, advance the a-f control and press the knob CALIBRATION at the left of the frequency scale. A beat note should then be heard in the vicinity of each calibration mark, while zero beat should be obtained exactly at each calibration mark if the calibration is correct. The calibration can be corrected by means of the knob CALIBRATION at the right of the frequency scale.

5.2 Replacement of tubes

All tubes are readily replaceable after removal of the set from its cabinet. However, it is advisable to check and, if necessary, to correct the scale calibration by referring to 5.1 after a replacement of the oscillator tube Rö 4 (EC 81).

5.3 Replacing the Scale Lamp

A small sheet metal case is held by a spring behind the plexiglass scale between the r-f section and the mounting panel (parallel with the front panel). After turning this spring, the little case with its handle can be swung out and removed by pulling upward. Now the scale lamp (festoon lamp R & S Stock No. RL 163 S) can readily be replaced.

6 Table of Replaceable Parts

(Reference numbers according to circuit diagram)

Ref. No.	Designation	Ratings	R&S Stock No.	
C 1	Capacitor, ceramic	32 µµf	CCR 32/2	
C 2	Capacitor, ceramic	32 µµf	CCR 32/2	
C 3	Capacitor, ceramic	22 µµf	CWR 22/2	
C 4	Capacitor, ceramic	22 µµf	CWR 22/2	
C 5	Trimmer, disc	2 . . . 8 µµf	CV 911/2	
C 6	Trimmer, disc	2 . . . 8 µµf	CV 911/2	
C 7	Trimmer, disc	2 . . . 8 µµf	CV 911/2	
C 8	Trimmer, disc	2 . . . 8 µµf	CV 911/2	
C 9	Trimmer, disc Capacitor, ceramic	2 . . . 8 µµf 4 µµf	CV 911/2 CNR 4	 parallel
C 10	Capacitor, variable		15072 – 1.2	
C 11	Capacitor, ceramic	250 µµf	CHS 250	
C 12	Capacitor, ceramic	250 µµf	CHS 250	
C 13	Capacitor, ceramic	250 µµf	CHS 250	
C 14	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 3 µµf	CV 901 CNR 3	 parallel
C 15	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2	 parallel
C 16	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2	 parallel
C 17	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2	 parallel
C 18	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2	 parallel
C 19	Capacitor, ceramic	1000 µµf	CHS 1000	
C 20	Capacitor, ceramic	6 µµf	CTR 6	
C 21	Capacitor, ceramic	80 µµf	CCR 80	
C 22	Capacitor, ceramic	0.5 µµf	CNS 0,5	
C 23	Capacitor, ceramic	2 µµf	CTS 2	
C 24	Capacitor, ceramic	250 µµf	CHS 250	
C 25	Capacitor, ceramic	1000 µµf	CHS 1000	

Ref. No.	Designation	Ratings	R&S Stock No.
C 26	Capacitor, ceramic	80 µµf	CCR 80
C 27	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 3 µµf	CV 901 CNR 3 parallel
C 28	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2 parallel
C 29	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2 parallel
C 30	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2 parallel
C 31	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 2 µµf	CV 901 CNS 2 parallel
C 32	Capacitor, paper, round	100,000 µµf/250 v	CRF 100 000/250
C 33	Capacitor, ceramic	6 µµf	CTR 6
C 34	Trimmer, disc Capacitor, ceramic	4 . . . 20 µµf 12 µµf	CV 921/2 CTR 12 parallel
C 35	Capacitor, ceramic	1000 µµf	CHS 1000
C 36	Capacitor, ceramic	1000 µµf	CHS 1000
C 37	Capacitor, ceramic	2 µµf	CNS 2
C 38	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 3 µµf	CV 901 CNR 3 parallel
C 39	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 3 µµf	CV 901 CNR 3 parallel
C 40	Trimmer, piston-type Capacitor, ceramic	0.5 . . . 2 µµf 3 µµf	CV 901 CNR 3 parallel
C 41	Trimmer, piston-type	0.5 . . . 2 µµf	CV 901
C 42	Trimmer, piston-type	0.5 . . . 2 µµf	CV 901
C 43	Capacitor, ceramic	200 µµf	CCR 200/5
C 44	Capacitor, ceramic	180 µµf	CCR 180/5
C 45	Capacitor, ceramic	230 µµf	CCR 230/5
C 46	Capacitor, ceramic	160 µµf	CCR 160/5
C 47	Capacitor, ceramic	160 µµf	CCR 160/5
C 48	Capacitor, ceramic	200 µµf	CCR 200/5
C 49	Capacitor, ceramic	180 µµf	CCR 180/5
C 50	Capacitor, ceramic	230 µµf	CCR 230/5
C 51	Capacitor, ceramic	160 µµf	CCR 160/5
C 52	Capacitor, ceramic	160 µµf	CCR 160/5

Ref. No.	Designation	Ratings	R&S Stock No.
C 53	Capcitor, feed-thru, ceramic	500 µµf	CFS 500
C 54	Capacitor, ceramic	6 µµf	CTR 6
C 55	Capacitor, ceramic	20 µµf	CNR 20
C 56	Trimmer		1507 – 1.24.8
C 57	Capacitor, feed-thru	125 µµf	CFG 125/5
C 58	Capacitor, feed-thru	125 µµf	CFG 125/5
C 59	Capacitor, feed-thru, ceramic	500 µµf	CFS 500
C 60	Capacitor, feed-thru	125 µµf	CFG 125/5
C 61	Capacitor, feed-thru	125 µµf	CFG 125
C 62	Capacitor, feed-thru, ceramic	500 µµf	CFS 500
C 63	Capacitor, feed-thru, ceramic	500 µµf	CFS 500
C 64	Capacitor, feed-thru	125 µµf	CFG 125/5
C 65	Capacitor, feed-thru	125 µµf	CFG 125
C 66	Capacitor, feed-thru	125 µµf	CFG 125/5
C 67	Capacitor, feed-thru	125 µµf	CFG 125
C 70	Capacitor, ceramic	40 µµf	CTR 40
C 71	Capacitor, ceramic	80 µµf	CTR 80
C 74	Capacitor, tubular, ceramic Capacitor, ceramic	1 . . . 10 µµf 30 µµf	CV 7210 parallel CTR 30
C 75	Capacitor, ceramic	6 µµf	CTR 6
C 76	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 8 µµf	CV 8125 parallel CTR 8
C 77	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 8 µµf	CV 8125 parallel CTR 8
C 78	Capacitor, ceramic	16 µµf	CTR 16
C 79	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 80	Capacitor, ceramic	30 µµf	CTR 30
C 81	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 8 µµf	CV 8125 parallel CTR 8
C 82	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 40 µµf	CV 8125 parallel CTR 40
C 83	Capacitor, paper	20,000 µµf/250 v	2 x CPM 10 000/250

Ref. No.	Designation	Ratings	R&S Stock No.
C 84	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 6 µµf	CV 8125 CTR 6 parallel
C 85	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 20 µµf	CV 8125 CTR 20 parallel
C 86	Capacitor, ceramic	1 . . . 3 µµf	CTS . . .
C 87	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 88	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 89	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 8 µµf	CV 8125 CTR 8 parallel
C 90	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 40 µµf	CV 8125 CTR 40 parallel
C 91	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 92	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 6 µµf	CV 8125 CTR 6 parallel
C 93	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 40 µµf	CV 8125 CTR 40 parallel
C 94	Capacitor, ceramic	20 µµf	CTR 20
C 95	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 96	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 97	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 8 µµf	CV 8125 CTR 8 parallel
C 98	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 40 µµf	CV 8125 CTR 40 parallel
C 99	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 100	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 6 µµf	CV 8125 CTR 6 parallel
C 101	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 40 µµf	CV 8125 CTR 40 parallel
C 102	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 103	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 104	Trimmer, air	4 . . . 29 µµf	CV 8125
C 105	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 25 µµf	CV 8125 CTR 25 parallel
C 106	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 107	Capacitor, ceramic	6 µµf	CTR 6
C 108	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 109	Capacitor, ceramic	16 µµf	CTR 16
C 110	Capacitor, ceramic	0.5 µµf	CNS 0,5

Ref. No.	Designation	Ratings	R&S Stock No.
C 111	Capacitor, ceramic	25 µµf	CTR 25
C 112	Capacitor, ceramic	25 µµf	CTR 25
C 113	Capacitor, ceramic	8 µµf	CTR 8
C 114	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 115	Capacitor, MP, round	0.25 µf/500 v	CMR 0,25/500
C 116	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 117	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 16 µµf	CV 8125 parallel CTR 16
C 118	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 20 µµf	CV 8125 parallel CTR 20
C 119	Capacitor, ceramic	250 µµf	CHS 250
C 120	Capacitor, ceramic	250 µµf	CHS 250
C 121	Capacitor, electrolytic	10 µf/70 v	CED 3/10/70
C 122	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 40 µµf	CV 8125 parallel CTR 40
C 123	Trimmer, air Capacitor, ceramic	4 . . . 29 µµf 180 µµf	CV 8125 parallel 3 x CTR 60
C 124	Capacitor, ceramic	250 µµf	CHS 250
C 125	Capacitor, ceramic	250 µµf	CHS 250
C 126	Capacitor, electrolytic	10 µf/70 v	CED 3/10/70
C 127	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 128	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 129	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 130	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 131	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 132	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 133	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 134	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350
C 135	Capacitor, feed-thru, ceramic	5000 µµf/350 v	CFR 1/5000/350

Ref. No.	Designation	Ratings	R&S Stock No.
C 136	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 137	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 138	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 139	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 140	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 141	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 142	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 143	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 144	Capacitor, feed-thru, ceramic	100 μμf/500 v	CFR 81/100/500
C 145	Capacitor, feed-thru, ceramic	100 μμf/500 v	CFR 81/100/500
C 146	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 147	Capacitor, feed-thru, ceramic	100 μμf/500 v	CFR 81/100/500
C 148	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 149	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 150	Capacitor, feed-thru, ceramic	100 μμf/500 v	CFR 81/100/500
C 151	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 152	Capacitor, feed-thru, ceramic	5000 μμf/350 v	CFR 1/5000/350
C 153	Capacitor, feed-thru, ceramic	100 μμf/500 v	CFR 81/100/500
C 154	Capacitor, paper, round	10,000 μμf/250 v	CRF 10 000/250
C 155	Capacitor, paper, round	100,000 μμf/250 v	CRF 100 000/250
C 156	Capacitor, feed-thru, ceramic	100 μμf/500 v	CFR 81/100/500
C 157	Capacitor, MP, round	4 μf/160 v	CMR 4/160

Ref. No.	Designation	Ratings	R&S Stock No.
C 158	Capacitor, paper, round	10,000 µµf/250 v	CRF 10 000/250
C 159	Capacitor, ceramic	20 µµf	CTR 20
C 160	Capacitor, MP, round	0.5 µf/250 v	CMR 0,5/250
C 161	Capacitor, paper, round	25,000 µµf/250 v	CRF 25 000/250
C 162	Capacitor, MP, round	1 µf/250 v	CMR 1/250
C 163	Capacitor, paper, round	50,000 µµf/250 v	CRF 50 000/250
C 164	Capacitor, paper, round	1000 µµf/500 v	CRF 1000/500
C 165	Capacitor, ceramic	80 µµf	CTR 80
C 166	Capacitor, MP, round	0.25 µf/500 v	CMR 0,25/500
C 167	Capacitor, ceramic	10 µµf	CTR 10
C 171	Capacitor, feed-thru	125 µµf	CFG 125/5
C 172	Capacitor, feed-thru	125 µµf	CFG 125
C 173	Capacitor, feed-thru	125 µµf	CFG 125/5
C 174	Capacitor, feed-thru	125 µµf	CFG 125
C 175	Capacitor, paper, round	10,000 µµf/500 v	CRF 10 000/500
C 176	Capacitor, paper, round	10,000 µµf/500 v	CRF 10 000/500
C 177	Capacitor, paper, round	10,000 µµf/500 v	CRF 10 000/500
C 178	Capacitor, paper, round	10,000 µµf/500 v	CRF 10 000/500
C 180	Capacitor, synthetic foil	1000 µµf/500 v	CKS 1000/500
C 181	Capacitor, ceramic	3 µµf	CNR 3
C 182	Capacitor, ceramic	30 µµf	CTR 30
C 183	Capacitor, ceramic	6 µµf	CTR 6
C 184	Capacitor, ceramic	100 µµf	CTR 100
C 185	Trimmer, disc Capacitor, ceramic	4 . . . 20 µµf 30 µµf	CV 921/2 parallel CTR 30
C 186	Capacitor, ceramic	100 µµf	CTR 100
C 187	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 188	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 189	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 190	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000

Ref. No.	Designation	Ratings	R&S Stock No.
C 191	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 192	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 193	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 194	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 195	Capacitor, feed-thru, ceramic	2000 µµf	CFS 2000
C 196	Capacitor, ceramic	30 µµf	CCR 30
C 197	Capacitor, ceramic	30 µµf	CCR 30
C 198	Capacitor, paper, round	100,000 µµf/250 v	CRF 100 000/250
C 200 C 201	Capacitor, MP, round	8 µf/350 v 8 µf/350 v	CMR 8 + 8/350
C 202	Capacitor, MP, round	1 µf/500 v	CMR 1/500
C 203	Capacitor, paper, round	100,000 µµf/250 v	CRF 100 000/250
C 204	Capacitor, paper, round	100,000 µµf/250 v	CRF 100 000/250
C 205	Capacitor, synthetic foil	1000 µµf/500 v	CKS 1000/500
Gl 1	Rectifier (meter)		GL 011/2
Gl 2	Diode, crystal		GK 2261
Gl 3	Diode, crystal		GK 2261
Gl 4 Gl 5	Diode, crystal Diode, crystal		GK 2262
Gl 6 Gl 7	Diode, crystal Diode, crystal		GK 2262
Gl 8	Diode, crystal		GK 2251
Gl 10	Diode, crystal		GK 2261
I 1	Ammeter, moving-coil		IS 021/20 µA
I 2	Ammeter, moving-coil		15061 – 5
K 1	Cable, r-f		LK 126/5
K 3	Cable, r-f		LK 126/5
K 4	Cable, r-f		LK 126/6

Ref. No.	Designation	Ratings	R&S Stock No.
K 5	Cable, r-f		LK 126 6
K 6	Cable, r-f		LK 126/6
K 7	Sleeve, insulating, shielded		LJA 1,5 ge
K 8	Sleeve, insulating, shielded		LJA 1,5 ge
K 9	Sleeve, insulating, shielded		LJA 1,5 ge
K 10	Sleeve, insulating, shielded		LJA 1,5 ge
K 11	Sleeve, insulating, shielded		LJA 1,5 ge
K 12	Sleeve, insulating, shielded		LJA 1,5 ge
K 13	Sleeve, insulating, shielded		LJA 1,5 ge
K 14	Sleeve, insulating, shielded		LJA 1,5 ge
K 15	Cable, power		LK 333
K 16	Cable, 2-wire, shielded		LK/YL (C) Y 2 x 0,2
K 17	Cable, 2-wire, shielded		LK/YL (C) Y 2 x 0,2
K 18	Cable, 2-wire, shielded		LK/YL (C) Y 2 x 0,2
K 19	Sleeve, insulating, shielded		LJA 1,5 ge
K 20	Sleeve, insulating, shielded		LJA 1,5 ge
K 21	Sleeve, insulating, shielded		LJA 1,5 ge
K 22	Sleeve, insulating, shielded		LJA 1,5 ge
K 23	Sleeve, insulating, shielded		LJA 1,5 ge
L 1	Coil (filter)		15072 – 6.4
L 2	Coil (filter)		15072 – 6.4
L 3	Coil (filter)		15072 – 6.5
L 5	Coil (tank)		15072 – 1.3.1
L 6	Coil (tank)		15072 – 1.3.2

Ref. No	Designation	Ratings	R&S Stock No.
L 7	Coil (tank)		15072 – 1.3.3
L 8	Coil (tank)		15072 – 1.3.4
L 9	Coil (tank)		15072 – 1.3.5
L 10	Coil (tank)		15072 – 1.4.1
L 11	Coil (tank)		15072 – 1.4.2
L 12	Coil (tank)		15072 – 1.4.3
L 13	Coil (tank)		15072 – 1.4.4
L 14	Coil (tank)		15072 – 1.4.5
L 15	Coil (tank)		15072 – 1.4.1
L 16	Coil (tank)		15072 – 1.4.2
L 17	Coil (tank)		15072 – 1.4.3
L 18	Coil (tank)		15072 – 1.4.4
L 19	Coil (tank)		15072 – 1.4.5
L 20	Coil (tank)		15072 – 1.5.1
L 21	Coil (tank)		15072 – 1.5.2
L 22	Coil (tank)		15072 – 1.5.3
L 23	Coil (tank)		15072 – 1.5.4
L 24	Coil (tank)		15072 – 1.5.5
L 27	Transformer (i-f)		15071 – 1.13
L 29	Choke		1507 – 1.24.17
L 30	Choke		1507 – 1.24.18
L 31	Choke		1507 – 1.24.17
L 32	Choke		1507 – 1.24.18
L 34	Coil (coupling)		15071 – 2.34.2
L 35	Coil (filter)		15071 – 2.34.1
L 36	Coil (filter)		15071 – 2.33.2
L 37	Coil (filter)		15071 – 2.33.1
L 38	Coil (filter)		15071 – 2.31.1
L 39	Coil (filter)		15071 – 2.31.1
L 40	Coil (filter)		15071 – 2.32.1
L 41	Coil (filter)		15071 – 2.32.1

Ref. No.	Designation	Ratings	R&S Stock No.
L 42	Coil, Filter		1507 - 2.31 1
L 43	Coil, Filter		1507 - 2.31 1
L 44	Coil, Filter		1507 - 2.32 1
L 45	Coil, Filter		1507 - 2.32 1
L 46	Coil, Filter		1507 - 2.31 1
L 47	Coil, Filter		1507 - 2.31 1
L 48	Coil, Filter		1507 - 2.32 1
L 49	Coil, Filter		1507 - 2.32 1
L 50	Coil, Filter		1507 - 2.31 1
L 51	Coil, Filter		1507 -2.32 1
L 52	Coil (limiter)		1507 - 2.29 3
L 54	Coil (discriminator)		1507 - 2.29 4
L 55	Coil (limiter)		1507 - 2.29 1
L 57	Coil (discriminator)		1507 - 2.29 2
L 58	Choke, r-f		1508 - 2.25
L 59	Choke, r-f		1508 - 2.25
L 60	Choke, r-f		1508 - 2.25
L 61	Choke, r-f		1508 - 2.25
L 62	Choke, r-f		1508 - 2.25
L 63	Choke, r-f		1508 - 2.25
L 64	Choke, r-f		1508 - 2.25
L 65	Choke, r-f		1508 - 2.25
L 66	Choke, r-f		1508 - 2.25
L 67	Choke, r-f		1508 - 2.25
L 68	Choke, r-f		1508 - 2.25
L 69	Choke, r-f		1508 - 2.25
L 70	Choke, r-f		1508 - 2.25
L 71	Choke, r-f		1508 - 2.25
L 72	Choke, r-f		1508 - 2.25
L 73	Choke, r-f		1508 - 2.25
L 74	Choke, r-f		1508 - 2.25
L 75	Choke, r-f		1508 - 2.25

Ref. No.	Designation	Ratings	R&S Stock No.
L 76	Choke, r-f		1508 – 2.25
L 77	Coil (tank)		15071 – 4.12
L 78	Choke, r-f		1508 – 2.25
L 79	Choke, r-f		1508 – 2.25
L 80	Choke		15071 – 4.13
L 81	Choke, r-f		1508 – 2.25
L 82	Choke, r-f		1508 – 2.25
L 83	Choke		15071 – 4.13
L 84	Choke, r-f		1508 – 2.25
L 85	Choke, r-f		1508 – 2.25
L 86	Choke		15071 – 4.14
L 87	Choke, r-f		1508 – 2.25
L 88	Choke		DB 125/2
L 89	Choke		1507 – 7.36
L 90	Choke		1507 – 7.36
Lt 1	Loudspeaker		PM 95/16 BR trop
Q 1	Crystal (control)	18 mc ± 0,01 %	QS 1/1
Q 2	Crystal (control)	21.4 mc ± 0,01 %	QS 2/1
R 1	Resistor, depos. carbon	100 Ω ± 2 %/0.25 w	WF 100/0,25 ± 2 %
R 2	Resistor, depos. carbon	200 kΩ/0.25 w	WF 200 k/0,25
R 3	Resistor, depos. carbon	5 kΩ/1 w	WF 5 k/1
R 4	Resistor, depos. carbon	20 kΩ/0.25 w	WF 20 k/0,25
R 5	Resistor, depos. carbon	10 Ω/0.05 w	WF 10/0,05
R 6	Resistor, depos. carbon	200 Ω ± 2 %/0.25 w	WF 200/0,25 ± 2 %
R 7	Resistor, depos. carbon	160 kΩ/0.5 w	WF 160 k/0,5
R 8	Resistor, depos. carbon	60 kΩ/0.25 w	WF 60 k/0,25
R 9	Resistor, depos. carbon	5 kΩ/1 w	WF 5 k/1
R 10	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 11	Resistor, depos. carbon	60 kΩ/0.25 w	WF 60 k/0,25

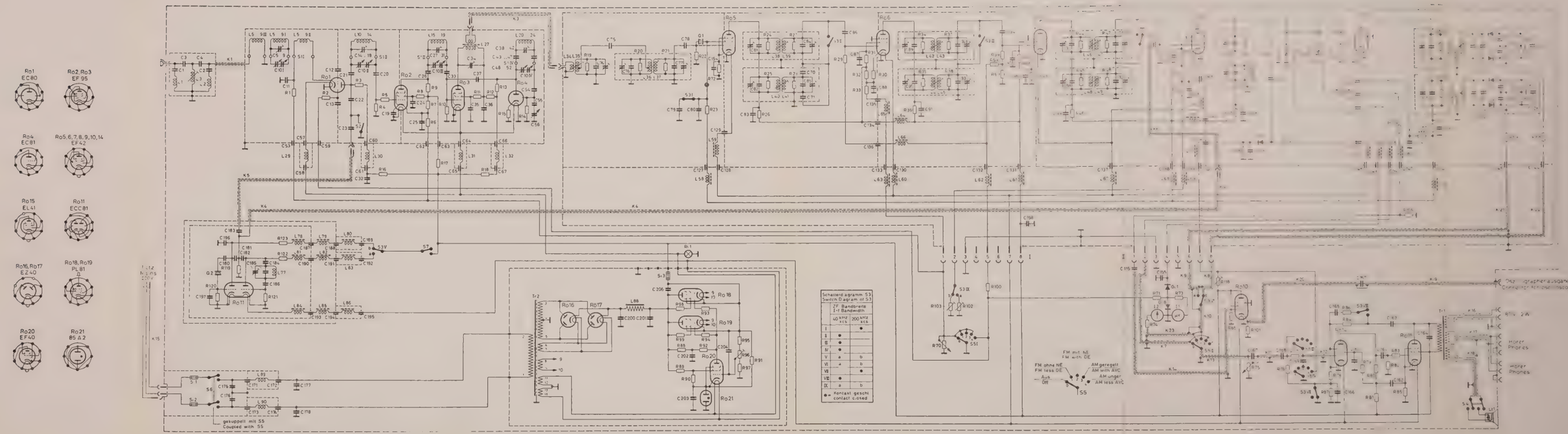
Ref. No.	Designation	Ratings	R&S Stock No.
R 12	Resistor, depos. carbon	1 kΩ/0.5 w	WF 1 k/0,5
R 13	Resistor, depos. carbon	10 kΩ/1 w	WFO 10 k/1
R 14	Resistor, depos. carbon	30 kΩ/0.25 w	WF 30 k/0,25
R 15	Resistor, depos. carbon	5 Ω/0.05 w	WF 5/0,05
R 16	Resistor, depos. carbon	1 kΩ/0.5 w	WF 1 k/0,5
R 17	Resistor, depos. carbon	1 kΩ/0.5 w	WF 1 k/0,5
R 18	Resistor, depos. carbon	5 kΩ/1 w	WF 5 k/1
R 19	Resistor, depos. carbon	50 kΩ/0.1 w	WF 50 k/0,1
R 20	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 21	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 22	Resistor, depos. carbon	500 kΩ/0.25 w	WF 500 k/0,25
R 23	Resistor, depos. carbon	10 kΩ/0.5 w	WF 10 k/0,5
R 24	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 25	Resistor, depos. carbon	60 kΩ/0.1 w	WF 60 k/0,1
R 26	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 27	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 28	Resistor, depos. carbon	60 kΩ/0.1 w	WF 60 k/0,1
R 29	Resistor, depos. carbon	200 kΩ/0.25 w	WF 200 k/0,25
R 30	Resistor, depos. carbon	50 Ω/0.1 w	WF 50/0,1
R 31	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 32	Resistor, depos. carbon	50 kΩ/1 w	WF 50 k/1
R 33	Resistor, depos. carbon	160 Ω/0.25 w	WF 160/0,25
R 34	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 35	Resistor, depos. carbon	60 kΩ/0.1 w	WF 60 k/0,1
R 36	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 37	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 38	Resistor, depos. carbon	60 kΩ/0.1 w	WF 60 k/0,1
R 39	Resistor, depos. carbon	200 kΩ/0.25 w	WF 200 k/0,25
R 40	Resistor, depos. carbon	50 Ω/0.1 w	WF 50/0,1
R 41	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 43	Resistor, depos. carbon	160 Ω/0.25 w	WF 160/0,25

Ref. No.	Designation	Ratings	R&S Stock No.
R 44	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 45	Resistor, depos. carbon	60 kΩ/0.1 w	WF 60 k/0,1
R 46	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 47	Resistor, depos. carbon	40 kΩ/0.1 w	WF 40 k/0,1
R 48	Resistor, depos. carbon	60 kΩ/0.1 w	WF 60 k/0,1
R 49	Resistor, depos. carbon	200 Ω/0.1 w	WF 200/0,1
R 50	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 51	Resistor, depos. carbon	160 kΩ/0.5 w	WF 160 k/0,5
R 52	Resistor, depos. carbon	160 Ω/0.25 w	WF 160/0,25
R 53	Resistor, depos. carbon	10 . . . 50 Ω/0.25 w	WF . . . /0,25
R 54	Resistor, depos. carbon	factory adjustment	WF . . . /0,1
R 55	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 56	Resistor, depos. carbon	10 kΩ/0.25 w	WF 10 k/0,25
R 57	Resistor, depos. carbon	40 kΩ/0.25 w	WF 40 k/0,25
R 58	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 59	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 60	Resistor, depos. carbon	200 kΩ/0.25 w	WF 200 k/0,25
R 61	Resistor, depos. carbon	50 kΩ/0.25 w	WF 50 k/0,25
R 62	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 63	Resistor, depos. carbon	50 kΩ/0.25 w	WF 50 k/0,25
R 65	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 66	Resistor, depos. carbon	200 kΩ/0.5 w	WF 200 k/0,5
R 67	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 68	Resistor, depos. carbon	20 kΩ/0.25 w	WF 20 k/0,25
R 69	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 70	Resistor, depos. carbon, variable	1 kΩ lin.	WS 7126/1 k
R 71	Resistor, depos. carbon	200 kΩ/0.25 w	WF 200 k/0,25
R 72	Resistor, depos. carbon	100 Ω/0.25 w	WF 100/0,25
R 73	Resistor, depos. carbon	400 kΩ/0.25 w	WF 400 k/0,25
R 74	Resistor, depos. carbon	125 kΩ/0.25 w	WF 125 k/0,25
R 75	Resistor, depos. carbon, variable	1 megΩ log.	WS/SS 5226/1 M

Ref. No.	Designation	Ratings	R&S Stock No.
R 76	Resistor, depos. carbon	3 megΩ/0.25 w	WF 3 M/0,25
R 77	Resistor, depos. carbon	1.6 megΩ/0.25 w	WF 1,6 M/0,5
R 78	Resistor, depos. carbon	1.6 kΩ/0.25 w	WF 1,6 k/0,25
R 79	Resistor, depos. carbon	600 kΩ/0.5 w	WF 600 k/0,5
R 80	Resistor, depos. carbon	200 kΩ/0.5 w	WF 200 k/0,5
R 81	Resistor, depos. carbon	50 kΩ/0.5 w	WF 50 k/0,5
R 82	Resistor, depos. carbon	600 kΩ/0.5 w	WF 600 k/0,5
R 83	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 84	Resistor, depos. carbon	1 megΩ/0.5 w	WF 1 M/0,5
R 85	Resistor, depos. carbon	160 Ω ± 2 %/0.5 w	WF 160/0,5 ± 2 %
R 86	Resistor, depos. carbon	50 kΩ/0.25 w	WF 50 k/0,25
R 87	Resistor, depos. carbon	10 kΩ/0.5 w	WF 10 k/0,5
R 88	Resistor, depos. carbon	100 kΩ/0.5 w	WF 100 k/0,5
R 89	Resistor, depos. carbon	80 kΩ/0.5 w	WF 80 k/0,5
R 90	Resistor, depos. carbon	20 kΩ/0.5 w	WF 20 k/0,5
R 91	Resistor, depos. carbon	80 kΩ/0.5 w	WF 80 k/0,5
R 92	Resistor, depos. carbon	500 kΩ/0.5 w	WF 500 k/0,5
R 93	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 94	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 95	Resistor, depos. carbon	125 kΩ/0.5 w	WF 125 k/0,5
R 96	Resistor, depos. carbon, variable	10 kΩ lin.	WS 9122 F/10 k
R 97	Resistor, depos. carbon	80 kΩ/0.5 w	WF 80 k/0,5
R 98	Resistor, depos. carbon	30 Ω/0.25 w	WF 30/0,25
R 99	Resistor, depos. carbon	30 Ω/0.25 w	WF 30/0,25
R 100	Resistor, depos. carbon	125 kΩ/0.25 w	WF 125 k/0,25
R 101	Resistor, depos. carbon	200 Ω/0.25 w	WF 200/0,25
R 102	Resistor, depos. carbon, variable	1 kΩ lin.	WS 9122 F/1 k
R 103	Resistor, depos. carbon, variable	1 kΩ lin.	WS 9122 F/1 k
R 104	Resistor, depos. carbon	1 kΩ/0.25 w	WF 1 k/0,25
R 105	Resistor, depos. carbon	10 kΩ/0.25 w	WF 10 k/0,25

Ref. No.	Designation	Ratings	R&S Stock No.
R 108	Resistor, depos. carbon	factory adjustment	WF . . . /0,1
R 109	Resistor, depos. carbon	50 kΩ/0.1 w	WF 50 k/0,1
R 110	Resistor, depos. carbon	50 Ω/0.1 w	WF 50/0,1
R 111	Resistor, depos. carbon	1 megΩ/0.1 w	WF 1 M/0,1
R 112	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 113	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 114	Resistor, depos. carbon	50 Ω/0.1 w	WF 50/0,1
R 115	Resistor, depos. carbon	1 megΩ/0.1 w	WF 1 M/0,1
R 116	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 117	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 118	Resistor, depos. carbon, variable Resistor, depos. carbon	500 kΩ lin. 100 kΩ/0.25 w	WS 9122 F/500 k in series WF 100 k/0,25
R 119	Resistor, depos. carbon	60 Ω/0.25 w	WF 60/0,25
R 120	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 121	Resistor, depos. carbon	100 kΩ/0.25 w	WF 100 k/0,25
R 122	Resistor, depos. carbon	10 kΩ/1 w	WF 10 k/1
R 123	Resistor, depos. carbon	10 kΩ/1 w	WF 10 k/1
Rl 1	Lamp, festoon	6.3 v/0.3 amp	RL 163 S
Rö 1	Triode		EC 80
Rö 2	Pentode		EF 95
Rö 3	Pentode		EF 95
Rö 4	Triode		EC 81
Rö 5	Pentode		EF 42
Rö 6	Pentode		EF 42
Rö 7	Pentode		EF 42
Rö 8	Pentode		EF 42
Rö 9	Pentode		EF 42
Rö 10	Pentode		EF 42
Rö 11	Duotriode		ECC 81
Rö 14	Pentode		EF 42

Ref. No.	Designation	Ratings	R&S Stock No.
Rö 15	Pentode, output		EL 41
Rö 16	Rectifier, full-wave		EZ 40
Rö 17	Rectifier, full-wave		EZ 40
Rö 18	Pentode, output		PL 81
Rö 19	Pentode, output		PL 81
Rö 20	Pentode		EF 40
Rö 21	Stabilizer		85 A 2
S 1	Coil turret		incl. in 15071 – 1
S 2	Contact, spring		incl. in 15071 – 1.14
S 3 I	Contact, spring		
S 3 II	Contact, spring		
S 3 III	Contact, spring		
S 3 IV	Contact, spring		
S3V-VIII	Switch, wafer		15071 – 7.25
S 3 IX	Spring assembly		SRF 3
S 4	Switch, sliding		incl. in R 75
S 5	Switch, wafer		SRN 314/32
S 6	Switch, toggle, forked		SR 132
S 7	Switch, rotary		SR 112/2/32
Si 1	Fuse	1 amp	1 DIN 41571
Si 2	Fuse	1 amp	1 DIN 41571
Si 3	Fuse	160 ma	0,16 DIN 41571
Tr 1	Transformer (output)		1507 – 5.7
Tr 2	Transformer (power)		15071 – 3.1



Circuit diagram of the VHF Monitoring Receiver 85/300, BN 15074/2

Guarantee. We guarantee our instruments **for 1 year** against faults arising from manufacturing or material defects (excepting tube failure). The lead and other seals of the instrument must be undamaged; goods must be consigned to our works carriage paid and at owner's risk and are returned carriage forward and at customer's risk.

Claims must be made in writing to reach us at the same time as the instrument, and should carry the number and date of our delivery note.

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